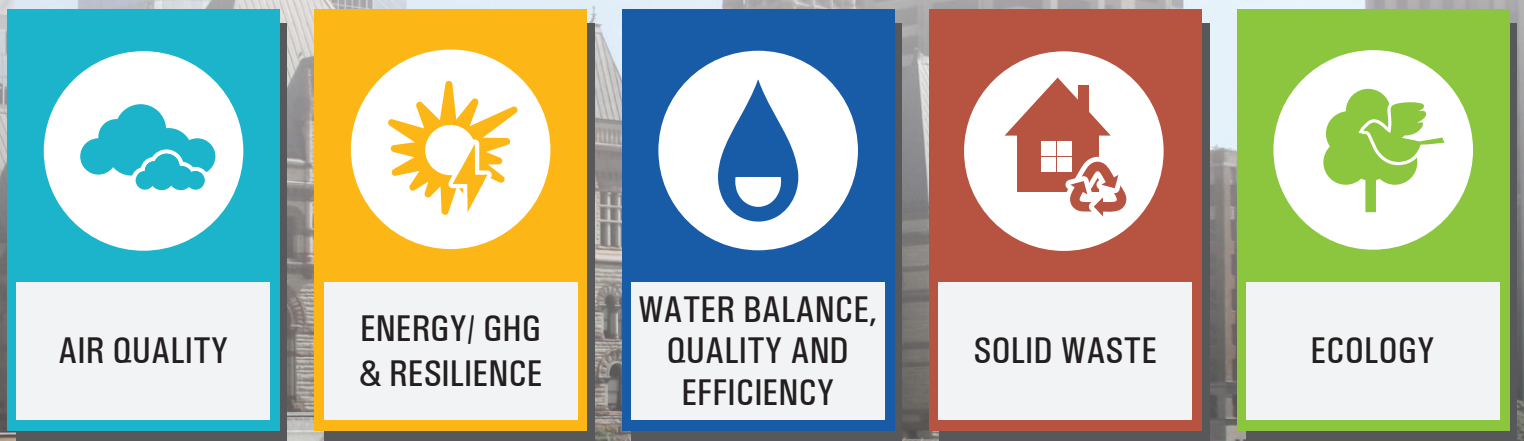
# TORONTO GREEN STANDARD v3




## SUSTAINABILITY REQUIREMENTS FOR NEW DEVELOPMENT IN TORONTO

### City Agency, Corporation & Division-Owned Facilities

(Non-residential uses greater than 100 $m^2$ GFA)

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TORONTO

# AIR QUALITY

Development Feature

## Low-Emission Transportation

Encourage the use of low emitting, fuel efficient vehicles, car pooling and car-sharing

### AQ 1.1 Single-Occupant Auto Vehicle Trips

Reduce single occupancy auto vehicle trips generated by the proposed development by 15% through a variety of multimodal infrastructure strategies and Transportation Demand Management (TDM) measures.

### AQ 1.2 LEV and Sustainable Mobility Spaces

If providing more than the minimum parking required under the Zoning Bylaw, the excess spaces must be dedicated priority parking spaces for low-emitting vehicles (LEV), carpooling/ridesharing or for publicly accessible spaces dedicated to shared vehicle systems such as car-sharing, ride-sharing, or micro mobility systems.

### AQ 1.3 Electric Vehicle Infrastructure

Design the building to provide 25% of the parking spaces with electric vehicle supply equipment (EVSE). The remaining parking spaces must be designed to permit future EVSE installation.

### AQ 1.4 Electric Vehicle Infrastructure, Low Carbon Pathway (Optional)

Design the building to provide 50% of parking spaces forwith electric vehicle supply equipment (EVSE). The remaining parking spaces must be designed to permit future EVSE installation.

Development Feature

## Cycling Infrastructure

Encourage cycling as a clean air alternative

### AQ 2.1 Bicycle Parking Rates

Bicycle Zone 1 and Bicycle Zone 2: Provide long-term and short-term bicycle parking spaces consistent with the non-residential bicycle parking rates identified in Chapter 230 of the City-wide Zoning Bylaw.

### AQ 2.2 Long-term Bicycle Parking Location

Long-term bicycle parking must be provided in a secure controlled-access bicycle parking facility or purpose-built bicycle locker:

(i) on the first storey of the building;
(ii) on the second storey of the building;
(iii) on levels of the building below-ground commencing with the first level below ground.

### AQ 2.3 Short-term Bicycle Parking Location

Locate short-term bicycle parking in a highly visible and publicly accessible location at-grade or on the first parking level of the building below grade.

### AQ 2.4 Shower & Change Facilities

Provide shower and change facilities consistent with the rate identified in Chapter 230 of the City-wide Zoning Bylaw.

### AQ 2.5 Publicly Accessible Bicycle Parking

For all uses within 500m of transit station entrance, provide at least 10 additional publicly accessible, short-term bicycle parking spaces, at-grade on the site or within the public boulevard bicycle parking in addition to parking required under AQ 2.1. Bicycle Parking must be weather protected except where located in the public boulevard.

Development Feature

## Pedestrian Infrastructure

Encourage walking as a clean air alternative for all ages and abilities

### AQ 3.1 Connectivity

Provide safe, direct, universally accessible pedestrian routes, including crosswalks and midblock crossings that connect the buildings on-site to the off-site pedestrian network and priority destinations.

### AQ 3.2 Sidewalk Space

Provide a context-sensitive pedestrian clearway that is a minimum of 2.1 m wide, to safely and comfortably accommodate pedestrian flow.

### AQ 3.3 Weather Protection

Provide covered outdoor waiting areas for pedestrian comfort and protection from inclement weather.

### AQ 3.4 Pedestrian Specific

Provide pedestrian-scale lighting that is evenly spaced, continuous and directed onto sidewalks, pathways, entrances, outdoor waiting areas and public spaces.

Development Feature

## Urban Heat Island

Reduce the impact of local heat islands on human and ecosystem health

### AQ 4.1 UHI Non-roof Hardscape

Use a combination of the following strategies to treat at least 75% of the site's non-roof hardscape (including driveways, walkways, courtyards, surface parking areas, artificial turf and other on-site hard surfaces):

- High-albedo paving materials with an initial solar reflectance of at least 0.33 or SRI of 29
- Open grid pavement with at least 50% perviousness
- Shade from existing or new tree canopy within10 years of landscape installation
- Shade from architectural structures that are vegetated or have an initial solar reflectance of at least 0.33 at installation or an SRI of 29
- Shade from structures with energy generation.

### AQ 4.2 Green & Cool Roofs

For new buildings or building additions with a GFA greater than 100 $m^2$ provide the following:

- Green roof equal to the greater than 50% of the Available Roof Space or the coverage requirement of the Green Roof Bylaw
- Cool roof on areas of Available Roof Space not covered by green roof area.

Development Feature

## Energy Efficiency

Reduce energy loads in buildings, encourage passive design strategies and provide protection during power disruptions

### GHG 1.1 Building Energy Performance

Design buildings, greater than 100m$^2$, to meet or exceed one of the following:

a) 25% energy efficiency improvement above the Ontario Building Code, SB-10 Division 3 (2017)

b) TEUI, TEDI, GHGI targets by building type, as provided in the Table 1

### GHG 1.2 High Performance, Low Carbon Pathway (Optional

Design the buildings to meet or exceed the targets by building type as provided in Table 1 or to meet an acceptable alternative compliance option such as the CaGBC Zero Carbon Building Standard or Passive House standards certification.

**Table 1: Building Energy Performance Requirements for City Buildings**

| Building Type** | Total Energy Use Intensity* (eKWh/m2) | Total Energy Demand Intensity* (eKWh/m2) | Greenhouse Gas Intensity (kgCO2e/m2) |
|---|---|---|---|
| Commercial Office Buildings | 130 | 30 | 15 |
| All Other Building Types | ≥25% improvement above SB-10 2017 | | |

*Refer to Energy Report Guideline for definitions and modelling guidelines.
**Additional absolute performance targets developed for City building types will replace the requirements for All Other Building Types.

Development Feature

## Renewable Energy

Provide low carbon energy sources of supply

### GHG 2.1 Solar Readiness

Ensure that buildings are designed to accomodate connections to solar PV or solar thermal technologies.

### GHG 2.2 On-site Renewable Energy

For new buildings with a gross floor area of greater than 100m$^2$ install renewable energy devices to supply one of the following:

a) minimum of 5% of the building's total energy load from one or a combination of acceptable energy sources; OR

b) minimum of 20% of the building's total energy load from geoexchange.

Development Feature

## District Energy System

Support low carbon, thermal energy networks

### GHG 3.1 District Energy Connection

Design buildings to connect to a district energy system where one exists or is slated for development.

Development Feature

## Operational Systems

Optimize and verify systems are installed and efficiencies are achieved

### GHG 4.1 Benchmarking & Reporting

Register the building on ENERGYSTAR® Portfolio Manager.

### GHG 4.2 Best Practice Commissioning

Commission the project using best practice commisioning.

### GHG 4.3 Air Tightness Testing

Conduct a whole-building Air Tightness Test to improve the quality and airtightness of the building envelope.

### GHG 4.4 Submetering

Install thermal energy sub-meters at a floor-by-floor scale for non-residential building types.

Development Feature

## Building Resilience

Enable self-recovery during an emergency power disruption

### GHG 5.1 Resilience Planning

Complete the Resilience Checklist.

### GHG 5.2 Back-Up Generation

Provide 72 hours of back-up power to the refuge area and essential building systems.

# WATER BALANCE, QUALITY AND EFFICIENCY

Development Feature

## Construction Activity:

Protect water quality during construction and demolition

### WQ 1.1 Erosion & Sediment Control

Follow the Erosion and Sediment Control Guideline for Urban Construction (Greater Golden Horseshoe Conservation Authorities, December 2006) during construction and demolition activities.

Development Feature

## Water Balance (Stormwater Retention):

Capture and manage rainfall to improve water quality and aquatic ecosystem health while enhancing the resilience of infrastructure to extreme rainfall events

### WQ 2.1 Stormwater Retention & Reuse

Retain runoff generated from a minimum of 10 mm depth of rainfall from all site surfaces through infiltration, evapotranspiration and water harvesting and reuse.

Development Feature

## Water Quality (Stormwater Run-Off)

Manage and clean stormwater that leaves the site

### WQ 3.1 Total Suspended Solids (TSS)

Remove 80% of total suspended solids (TSS) on an annual loading basis from all runoff leaving the site based on the post-development level of imperviousness.

### WQ 3.2 E.Coli Reduction

Control the amount of E. Coli directly entering Lake Ontario and waterfront areas as identified in the Wet Weather Flow Management Guidelines.

Development Feature

## Water Efficiency

Reduce demand for potable water through efficient fixtures and appliances and the reuse of non-potable water

### WQ 4.1 Drought-Tolerant Landscapes

Where potable water is used for irrigation, provide drought-tolerant plants for at least 50% of the landscaped site area (including at-grade landscapes, vegetated roofs and walls).

### WQ 4.2 Water Efficient Fixtures

Install water fixtures that achieve at least a 40% reduction in potable water consumption for the building (not including irrigation) over the baseline water fixtures.

### WQ 4.3 Efficient Irrigation

Where soft landscaping exists on the site, reduce potable water use for irrigation by 60%.

Development Feature

## Urban Forest: Increase Tree Canopy

Create landscapes that support tree growth and enhance the urban forest

### EC 1.1 Tree Planting and Soil Volume

Create tree planting areas within the site and in the adjacent public boulevard that meet the soil volume and other requirements necessary to provide tree canopy. Determine the total amount of soil required by the following formula:

**40% of the site area ÷ 66 $m^2$ x 30 $m^3$ = total soil volume required**

Ensure that each separate tree planting area has a minimum of 30 $m^3$ soil.

### EC 1.2 Trees Along Street Frontages

Plant large growing shade trees along street frontages that are spaced appropriately having regard to site conditions and have access to a minimum of 30 $m^3$ of soil per tree.

### EC 1.3 Parking Lots

Parking Lots: If surface parking is permitted and provided, plant large growing shade trees throughout the parking lot interior at a minimum ratio of one tree planted for every five parking spaces supplied.

### EC 1.4 Watering Program

Provide a watering program for trees for at least the first 2 years after planting.

Development Feature

## Natural Heritage

Protect, restore and enhance Ravine and Natural Feature Protected Areas

### EC 2.1 Ravine and Natural Feature Protected Areas and Natural Heritage System

Plant the landscaped area within the Natural Heritage System and the Ravine Protected Area with 100% native plants (including trees, shrubs and herbaceous plants).

### EC 2.2 Ravine and Protected Areas Buffers

Where a setback from the toe-of-slope or the top-of-bank is required within the Natural Heritage System or the Ravine Protected Area prepare and implement a stewardship plan for the area.

Development Feature

## Biodiversity In Landscapes

Enhancement of native plant and animal species, habitat and ecosystems

### EC 3.1 Native and Pollinator Supportive Species

Plant the landscaped site area using a minimum of 50% native plants (including trees, shrubs and herbaceous plants).

### EC 3.2 Invasive Species

Do not plant any invasive species within the site or along street frontages.

### EC 3.3 Biodiverse Green Roofs for Pollinators

Provide a minimum of 50% of Available Roof Space as biodiverse green roof.

Development Feature

## Bird Collision Deterrence

Design buildings to reduce bird collisions and mortality

### EC 4.1 Bird Friendly Glazing

Use a combination of the following strategies to treat a minimum of 85% of all exterior glazing within the greater of first 16 m of the building above grade or the height of the mature tree canopy (including balcony railings, clear glass corners, parallel glass and glazing surrounding interior courtyards and other glass surfaces):

- Low reflectance, opaque materials
- Visual markers applied to glass with a maximum spacing of 50 mm x 50 mm

Fly-through conditions: Treat glazing at all heights resulting in a fly-through conditions with visual markers at a spacing of no greater than 50 mm x 50 mm. Fly through conditions that require treatment include:

- Glass corners
- Parallel glass
- Building-integrated or free-standing vertical glass
- At-grade glass guardrails
- Glass parapets

### EC 4.2 Rooftop Vegetation

Treat the first 4 m of glazing above the feature and a buffer width of at least 2.5 m on either side of the feature using strategies from EC 4.1

### EC 4.3 Grate Porosity

Ensure ground level ventilation grates have a porosity of less than 20 mm X 20 mm (or 40 mm x 10 mm).

Development Feature

## Light Pollution

Reduce nighttime glare and light trespass to support ecosystem and human health

### EC 5.1 Exterior Lighting

All exterior fixtures must be Dark Sky compliant.

### EC 5.2 Enhanced Lighting

Any rooftop and facade architectural illumination must be directed downward and turned off between the hours of 11 p.m. and 6 a.m.

### EC 5.3 Lighting Controls

Install an automatic device that reduces the outward spillage of internal light by:

a) Reducing the input power to lighting fixtures by at least 50% between the hours of 11 p.m. and 6 a.m. year-round; OR
b) Shielding all openings in the envelope with a direct line of sight to any non-emergency light fixtures between the hours of 11 p.m. and 6 a.m. year-round.

Development Feature

## Construction Waste Management

Divert non-hazardous construction and demolition debris

### SW 1.1 Construction Waste

Divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams.